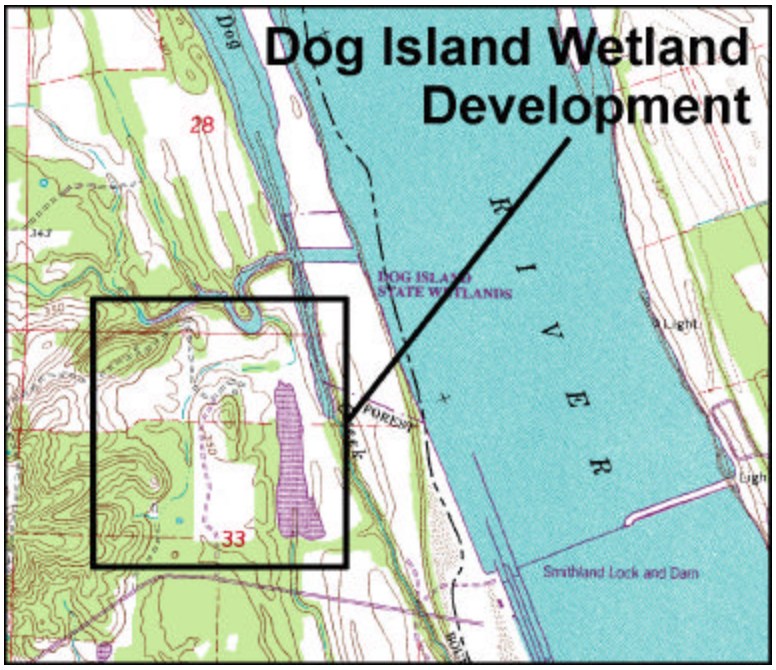
DOG ISLAND WETLAND DEVELOPMENT (IL-14)

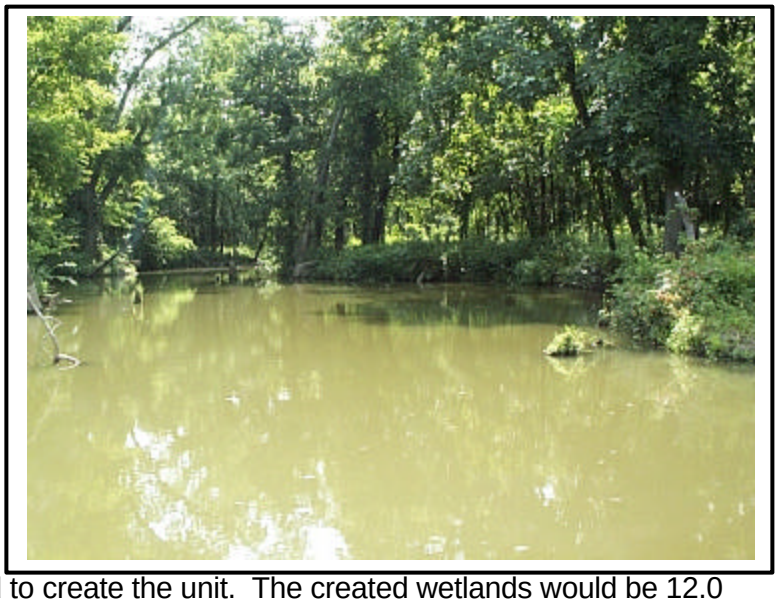
1.0 Location

The proposed Dog Island Wetland Development project area is located in Pope County, Illinois approximately 0.25 miles northwest of the Smithland Lock and Dam. The State of Illinois currently uses the project area as a fish and wildlife area. The project site is within the Ohio River Smithland Pool, and the mouth of Dog Creek enters the Ohio River at Ohio River Mile (ORM) 917.6. The project site is within the jurisdiction of the Louisville District, U.S. Army Corps of Engineers (USACE).



2.0 Project Goal, Description, and Rationale

The primary goal of the Dog Island Wetland Development project is to improve aquatic fishery and wildlife habitats. Two wetland areas/moist soil units will be created just south of Dog Island Creek. In addition, a new replacement water control structure will be added to an existing moist soil unit south of Dog Island Creek. These moist soil units will be managed to provide seasonal habitat for fish and migratory birds, especially waterfowl.



The flooding of these impoundments will be accomplished through overflow flooding from the Ohio River/Dog Island Creek and through direct precipitation in the moist soil units and their watersheds. Depending upon the type of vegetative communities desired in the units, management of the units would involve seasonal drawdowns.

For each of the new moist soil units, a small levee approximately 5-feet high with a flashboard-riser water control structure would be constructed to create the unit. The created wetlands would be 12.0 acres and 13.7 acres, respectively. The existing Dog Island Wetland is 17.1 acres. The existing water control structure has deteriorated. The existing structure will be removed, and a new flashboard-riser water control structure will be constructed of reinforced concrete.

3.0 Existing Conditions

Terrestrial/Riparian Habitat: The banks of Dog Island Creek and the adjacent floodplain are populated with bottomland hardwood trees. The dominant species present in the stand include box elder (*Acer negundo*), shagbark hickory (*Carya ovata*), swamp white oak (*Quercus bicolor*), and silver maple (*Acer saccharinum).* The trees within the proposed moist soil units are small which indicates that the area had been cleared recently.

Aquatic Habitats: The Dog Island Creek embayment is primarily a narrow riverine type embayment with depths that range from 1-10 feet. The average water depth in the embayment is less than two feet. The banks are characterized by mud, and the bottom substrates are composed primarily of silt, mud, and fine sand.

There is a complex stand of tree stumps in the littoral zone as the result of the increased water levels associated with the completion of the Smithland Dam in the early 1980's. The increased water levels in the Smithland Pool transformed the affected portions of Grand Pierre Creek in the project area from free flowing stream to a narrow slackwater embayment. The increased water level killed the trees in the affected portion of the riparian zone, and the tree stumps are all that remain.

Wetlands: It is likely that a portion of the Dog Island Project area would be considered a jurisdictional wetland. Wetlands in the vicinity of the project would be restricted to the bottomland hardwoods and scrub shrub area adjacent to the small feeder creek that enters the Dog Island embayment.

Federally-Listed Threatened and Endangered Species: According to the U.S. Fish and Wildlife Service (USFWS), there are five federally-listed threatened and endangered species known to occur in Pope County, Illinois and one species that is listed as a species of concern under a candidate conservation agreement. The listed species are shown on Table 1.

Table 1. Federally-listed species known to occur in Pope County, Illinois.

Common Name	Scientific Name	Federal Status	Potential Habitat Present
bald eagle	*Haliaeetus leucocephalus*	Threatened	yes
interior least tern	*Sterna antillarum*	Endangered	no
gray bat	*Myotis grisescens*	Endangered	yes
Indiana bat	*Myotis sodalis*	Endangered	yes
fat pocketbook pearly mussel	*Potamilus capax*	Endangered	no
copperbelly watersnake	*Nerodia erythrgaster neglecta*	Not listed (species of concern under a conservation agreement)	yes

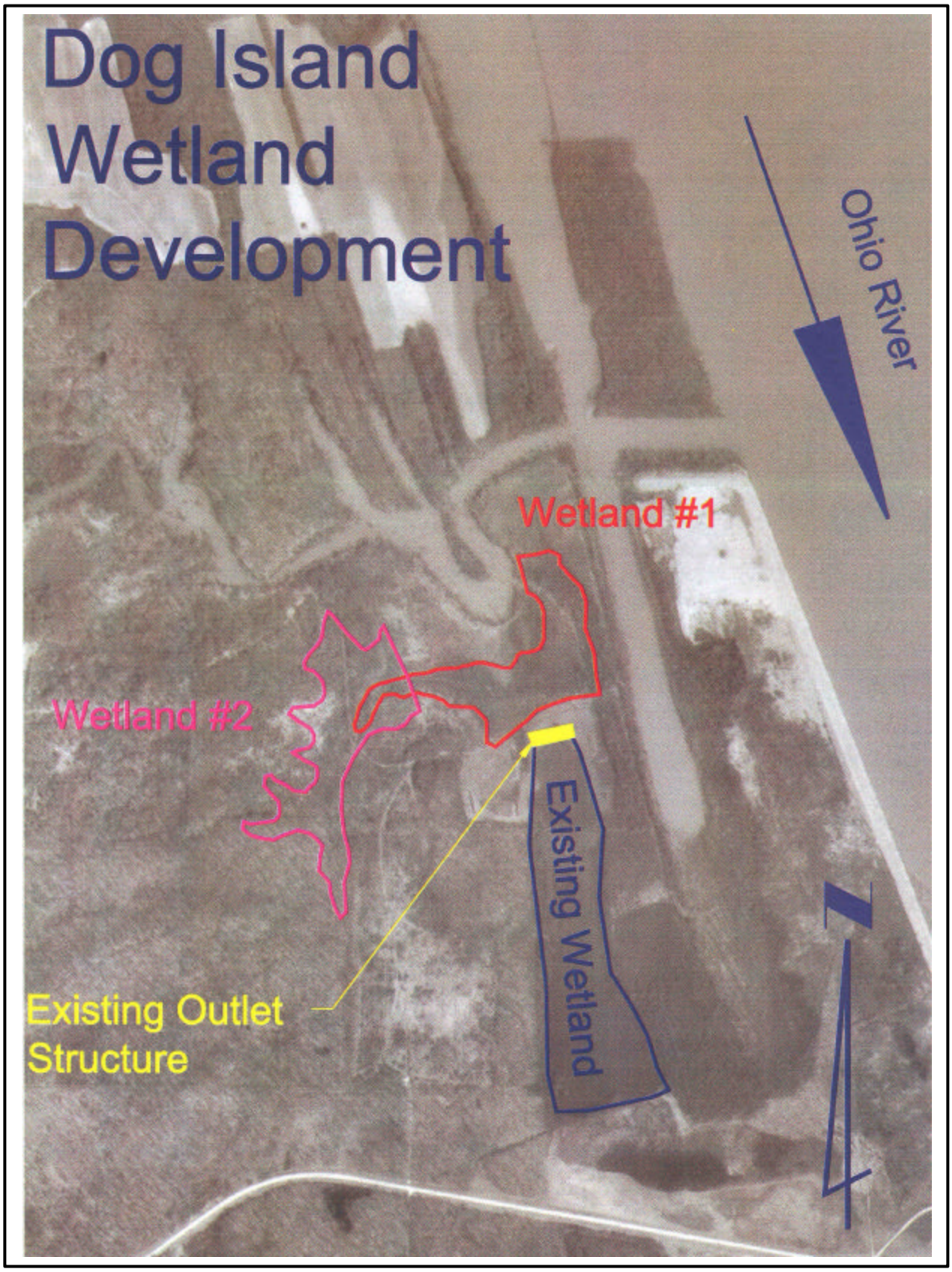
Source: Parsons Engineering Science, 1999

The riparian corridor adjacent to the Ohio River and Dog Island Creek may provide summer roost habitat for the Indiana bat. Preferred tree species would include a mixture of oaks, silver maple, cottonwood (*Populus deltoides*), and shagbark hickory (INHS, 1996). The riparian corridor would also provide feeding/foraging habitat for the Indiana bat and gray bat.

The bald eagle may roost adjacent to Dog Island Creek and the Ohio River, and bald eagles are known to feed, forage, and scavenge for fish and migratory birds along big rivers such as the Ohio River.

The copperbelly watersnake may utilize riparian, aquatic, and wetland habitat in the vicinity of the project area.

4.0 Project Diagram



5.0 Engineering Design, Assumptions, and Requirements

5.1 Wetland #1

A small levee 5-feet high and 200 feet in length would be constructed in conjunction with a flashboard-riser water control structure to provide a moist soil unit. The created wetland would be approximately 12.0 acres. A water control structure constructed of reinforced concrete would be installed within the levee at the downstream end of the pool. The flow line elevation would be below the bottom of the wetland pool. A metal channel would be installed vertically in the flashboard slots because wood and metal stop-logs do not seal well against concrete and considerable leakage can occur. The height of the opening would be 4 feet, allowing for 1 foot of freeboard. The width of the opening is 2 feet and would allow for the wetland to be drained in approximately 3 days. A grass lined emergency spillway would be provided to accommodate storm events. Concrete wingwalls on upper and lower sides of the levee would be used to protect the levee from erosion and reduce seepage around the control structure. Water regulation is achieved by placing "stop-logs" or "boards" in control slots to the desired elevation. Logs are commonly made of treated timber, metal, concrete, or PVC.

5.2 Wetland #2

A small levee 5-feet high and 550 feet in length would be constructed in conjunction with a flashboard-riser water control structure to provide a moist soil unit. The created wetland would be approximately 13.7 acres. A water control structure constructed of reinforced concrete would be installed within the levee at the downstream end of the pool. The flow line elevation would be below the bottom of the wetland pool. A metal channel would be installed vertically in the flashboard slots because wood and metal stop-logs do not seal well against concrete and considerable leakage can occur. The height of the opening would be 4 feet, allowing for 1 foot of freeboard. The width of the opening is 2 feet and would allow for the wetland to be drained in approximately 3 days. A grass lined emergency spillway would be provided to accommodate storm events. Concrete wingwalls on upper and lower sides of the levee would be used to protect the levee from erosion and reduce seepage around the control structure. Water regulation is achieved by placing "stop-logs" or "boards" in control slots to the desired elevation.

5.3 Repair of Existing Water Control Structure

The existing Dog Island Wetland is 17.1 acres. The existing water control structure has deteriorated and is in need of repairs. A new water control structure constructed of reinforced concrete would be installed within the levee at the downstream end of the pool. The flow line elevation would be below the bottom of the wetland pool. A metal channel would be installed vertically in the flashboard slots, because wood and metal logs do not seal well against concrete and considerable leakage may occur. The height of the opening would be 7 feet, allowing for 1 foot of freeboard. The width of the opening is 3 feet and would allow for the wetland to be drained in 3 days. A grass lined emergency spillway would be provided to accommodate storm events. Concrete wingwalls on upper and lower sides of the levee would be used to protect the levee from erosion and reduce seepage around the control structure. Water regulation is achieved by placing "stop-logs" or "boards" in control slots to the desired elevation.

6.0 Planning/Engineering Assumptions

Moist Soil Units:

- The levees would be created using materials from on site.
- The water control structures would be designed to allow complete drainage of each wetland unit in approximately three days.

7.0 Cost Estimate (Construction) Engineering costs for the proposed project are contained on Table 2. A detailed MCACES cost estimate for the proposed project is included in Appendix C.

Table 2. Engineering Costs.	
Item	**Cost**
Wetland #1	$10,900
Wetland #2	$15,600
Repair Existing Structure	$17,600
Mobilization	$15,000
TOTAL	**$59,100**

8.0 Schedule - The estimated construction time for this project is shown on Table 3.

Table 3. Construction Schedule.	
Item	**Time**
Wetland #1	10 Days
Wetland #2	18 Days
Repair Existing Structure	12 Days
Mobilization	2 Days
TOTAL	**42 Days**

9.0 Expected Ecological Benefits

Terrestrial/Riparian Habitat: There would be no reasonably foreseeable beneficial impacts to terrestrial/riparian resources as a result of implementing the proposed project.

Aquatic Habitats: Long-term beneficial impacts to aquatic resources would be anticipated as a result of implementing the proposed project. Fishes would be allowed seasonal access to the moist soil units, especially during high flow periods. Habitat requirements for fishes change seasonally, and seasonally flooded impoundments provide spawning and nursery habitat for fishes, especially sport fish such as black basses (Sheehan, 1994). In addition, moist soil units typically provide habitat for aquatic invertebrates, which are an important component in the food chain.

Wetlands: There would be long-term beneficial impacts to jurisdictional wetlands as a result of implementing the proposed project. Wetland vegetative communities can be manipulated through proper water level management. Wetland oriented species, especially shorebirds, wading birds, and waterfowl would benefit from the addition of wetland habitat. Wetland vegetation provides food, such as seeds, tubers, and shoots for waterfowl and shorebirds in addition to substrate for aquatic invertebrates.

Federally-Listed Threatened and Endangered Species: There would be long-term beneficial impacts to federally-listed threatened or endangered species as a result of implementing the proposed project. The bald eagle may roost adjacent to Dog Island Creek and the Ohio River, and they may feed/forage/scavenge for migratory birds, especially waterfowl in the newly created moist soil units.

The moist soil units would create habitat for aquatic insects, which are consumed by foraging Indiana and gray bats.

Socioeconomic Resources: There would be short-term and long-term beneficial impacts to socioeconomic resources as a result of implementing the proposed project. The short-term beneficial impacts would be related to costs and local expenditures associated with the construction of the moist soil units with their associated levees and water control structures. Long-term socioeconomic benefits would be realized through improved recreational hunting opportunities. Long-term indirect beneficial impacts will be realized through local expenditures for hunting and fishing gear, food, gas, and other associated needs.

6.0 Potential Adverse Environmental Impacts

Terrestrial/Riparian Habitat: There would be long-term adverse impacts to terrestrial species as a result of constructing the Dog Island Wetland Development project.

There would be short-term adverse impacts to terrestrial/riparian resources as a result of implementing the proposed project. There would be short-term adverse impacts to terrestrial species from construction-related noise and disturbance. Considering the existing high volume of disturbance from barge traffic along the Ohio River and recreational boat usage in the area, it is likely that the increased noise/disturbance impacts would be very minor. There would be long-term adverse impacts to the forest/old field communities throughout the project area. A

portion of the terrestrial vegetation would be degraded/denuded during construction of the wetland areas. Some terrestrial habitat would be lost and converted to wetland habitat.

Aquatic Habitats: There would be no reasonably foreseeable adverse impacts to aquatic habitats as a result of implementing the proposed project.

Wetlands: There would be short-term adverse impacts to a small amount jurisdictional wetland habitat as a result of implementing the proposed project. However, the creation and enhancement of over 20 acres of wetland/moist soil habitat would result in an overall beneficial impact to wetlands.

Federally-Listed Threatened and Endangered Species: It would be highly unlikely that the Indiana bat, gray bat, bald eagle, fat pocketbook mussel or the copperbelly watersnake would be adversely impacted by the proposed project. No significant timber that could provide summer roost habitat for Indiana bats or perching sites for bald eagles would be cleared during construction.

Socioeconomic Resources: There would be no reasonably foreseeable adverse socioeconomic impacts as a result of implementing the proposed project.

10.0 Mitigation

Minor impacts associated with site restoration may occur during the construction of this project, however, no significant adverse impacts are expected. The use of best management practices and proper construction techniques would minimize adverse water quality impacts.

Existing jurisdictional wetlands present (bottomland hardwoods and scrub shrub areas adjacent to the small feeder creek entering Dog Island Embayment) at the site would potentially be disturbed during the site restoration and enhancement. The restoration of the existing 12-acre parcel and the creation of over 30 additional acres of wetlands will result in a net increase in wetland acreage at the project site. Should additional mitigation be required it could occur at or adjacent to the site.

11.0 Preliminary Operation and Maintenance Costs:

Operation and Maintenance costs are summarized on Table 3. This costs represent maintenance associated with water control and do not include annual wildlife management activities.

Table 3. Operation and Maintenance Costs

Maintenance	Frequency	Costs
Wetland #1	25 Years	$10,000
Wetland #2	25 Years	$10,000
Existing Structure	25 Years	$10,000

12.0 Potential Cost Share Sponsor(s)

- State of Illinois
- barge/towing industry
- Ducks Unlimited
- The Nature Conservancy

13.0 Expected Life of the Project

The life expectancy of the project would be approximately 25 years.

14.0 Hazardous, Toxic, and Radiological Waste Considerations

Potential impacts of hazardous, toxic, and radiological waste (HTRW) at the site were visually assessed during a site visit.

Site Inspection Findings

The project is located in the Dog Island area at Ohio River mile 917 in Pope County, Illinois. The nearest Illinois towns are Hamletsburg and New liberty located on the Ohio River about 5 and 6 miles, respectively downstream of the project site.

The following environmental conditions were considered when conducting the July 19, 1999 project area inspection:

- Suspicious/Unusual Odors;
- Discolored Soil;
- Distressed Vegetation;
- Dirt/Debris Mounds;
- Ground Depressions;
- Oil Staining;
- Above Ground Storage Tanks (ASTs);
- Underground Storage Tanks (USTs);
- Landfills/Wastepiles;
- Impoundments/Lagoons;
- Drum/Container Storage;
- Electrical Transformers;
- Standpipes/Vent pipes;
- Surface Water Discharges;
- Power or Pipelines;
- Mining/Logging; and
- Other.

HTRW Findings and Conclusions

None of the environmental conditions listed above were observed in the project area.

Forested areas are located north, south, east and west of the project site.

15.0 Property Ownership & River Access

Selected data on properties immediately adjacent to the concept site were collected from the county courthouse for each site. Data collected included map and parcel identification number, property owner's name and mailing address, acreage of the potentially affected parcel, and market value of the parcel. This procedure involved obtaining a plat or parcel map of the site and surrounding area, which identified each parcel with a corresponding map and parcel number. The map/parcel identification number was subsequently used to determine the property owner's name and mailing address from records in the County Assessor's or County Auditor's office.

The market value of each parcel as contained in the property tables reflects the assessed valuation to supposedly market value ratio used by the State for taxation purposes. These assessed values reflect 1998 assessments. The assessed valuation ratio is 33 $^{1}/_{3}$ percent for Illinois.

The above ratio was used to approximate the market value of each property. However, the resultant market value calculated under the above procedure may be below the actual value of

the land in the real market. Local real estate brokers could provide a more accurate estimate of actual land values.

The collected property data indicate that agricultural and undeveloped forested land exists on and adjacent to the Dog Island site. The site is located on government owned by the U.S. Government and managed by the State of Illinois. Privately owned land is adjacent to the site. Access to the Dog Island site is within the governement owned land. (see Table 4).

Table 4. Property Characteristics

Site Name: Dog Island Wetland Development/Management
Location: Pope County, Illinois

Map/Parcel Number	Owner	Mailing Address	Market Value	Acreage
T15S-R7E, S33	U.S. Government			
T16-17S, R7E S4 (11404078 007)	Truman & Eulene Owens	P.O. Box 392 Hamletsburg, ILL 62944	$ 9,465	38.62

* Denotes improvements on property.

16.0 References

References:	
INHS, 1996	Illinois Natural History Survey Reports, March-April 1996. Survey Document #2152. Center for Biodiversity (J. Hofmann).
Scott, 1989	Scott, M.T. and L.A. Nielson. 1989. Young fish distribution in backwaters and main-channel borders of the Kanawha River, West Virginia. Journal of Fisheries Biology No. 35 (Supplement A) pp. 21-27.
Sheaffer, 1986	Sheaffer, W.A. and J.G. Nickum. 1986. Backwater areas as nursery habitats for fishes in Pool 13 of the Upper Mississippi River. Hydrobiology No. 136 pp. 131-140.
Sheehan, 1994	Sheehan, R.J., W.M. Lewis, and L.R. Bodensteiner. 1994. Winter habitat requirements and overwintering of riverine fishes. Fisheries Research Laboratory, Southern Illinois University, Carbondale, Illinois. Final Report F-79-R-6.
USFWS, 1999	U.S. Fish and Wildlife Service, June 23, 1999. Federally Endangered, Threatened and Proposed Species, Illinois.

APPENDIX A Threatened & Endangered Species

APPENDIX B Plan Formulation and Incremental Analysis Checklist

Project Site Location:

The proposed Dog Island Wetland Development project area is located in Pope County, Illinois approximately 0.25 miles northwest of the Smithland Lock and Dam. The State of Illinois currently uses the project area as a fish and wildlife area. The project site is within the Ohio River Smithland Pool, and the mouth of Dog Creek enters the Ohio River at Ohio River Mile (ORM) 917.6. The project site is within the jurisdiction of the USACE Louisville District.

Description of Plan Selected:

The goal of the Dog Island Wetland Development project is to improve aquatic fishery and wildlife habitats. Two wetland areas/moist soil units will be created just south of Dog Island Creek. In addition, a new replacement water control structure will be added to the existing moist soil unit. These moist soil units will be managed to provide seasonal habitat for fish and migratory birds, especially waterfowl.

For each of the new moist soil units, a small levee approximately 5-feet high with a flashboard-riser water control structure would be constructed to create the unit. The existing Dog Island Wetland water control structure has deteriorated. The existing structure will be removed, and a new flashboard-riser water control structure will be constructed of reinforced concrete.

Alternatives of the Selected Plan:

Smaller Size Plans Possible? **Yes** and description

Complete one new wetland unit instead of two.

Larger Size Plan Possible? **No** and description

Other alternatives? **No**

Restore/Enhance/Protect Terrestrial Habitats? Yes **Objective numbers met** T3

Restore, Enhance, & Protect Wetlands? Yes **Objective numbers met** W3

Restore/Enhance/Protect Aquatic Habitats? Yes **Objective numbers met** A1, A8

Type species benefited: Migratory waterfowl, wading birds, and fishes.

Endangered species benefited: No

Can estimated amount of habitat units be determined: Approximately 17 acres of wetland habitat will be restored and approximately 25.7 acres of new wetlands will be created.

Plan acceptable to Resources Agencies?
U.S. Fish & Wildlife Service?
State Department of Natural Resources? Yes – Illinois DNR

Plan considered complete? **Connected to other plans for restoration?**

Real Estate owned by State Agency? Yes **Federal Agency?** Yes
Real Estate privately owned? No
If privately owned, what is status of future acquisition Acquisition is not necessary.

Does this plan contribute significantly to the ecosystem structure or function requiring restoration? What goal or values does it meet in the Ecosystem Restoration Plan?

Provide habitat diversity, migratory bird habitat, seasonal aquatic habitat, and increased/enhanced wetland habitat.

Is this restoration plan a part of restoration projects planned by other agencies? (i.e. North American Waterfowl Management Plan, etc.)

No

In agencies opinion is the plan the most cost effective plan that can be implemented at this location?

Can this plan be implemented more cost effectively by another agency or institution?
Yes / No
Who:

From an incremental cost basis are there any features in this plan that would make the project more expensive than a typical project of the same nature? For embayment type plans is there excessive haul distance to disposal site? More expensive type disposal? Spoil that requires special handling/disposal?

Potential Project Sponsor:

Government Entity:_____
Non-government Entity _____

Corps Contractor _____Date_____

U.S. Fish & Wildlife Representative _____Date_____

State Agency Representative _____Date _____

U.S. Army Corps of Engineers Representative _____Date _____

Terrestrial Habitat Objectives

T1 Riparian Corridors

T2 Islands

T3 Floodplains

T4 Other unique habitats (canebrakes, river bluffs, etc.)

Wetland Habitat Objectives

W1 Forested Wetlands: Bottomland Hardwoods

W2 Forested Wetlands: Cypress/Tupelo Swamps and other unique forested wetlands

W3 Scrub/Shrub Emergent Wetlands: isolated from the river except during high water and contiguous (includes scrub/shrub wetlands in embayments and island sloughs)

Aquatic Habitat Objectives

A1 Backwaters (sloughs, embayments, oxbows, bayous, etc.)

A2 Riverine submerged and aquatic vegetation

A3 Sand and gravel bars

A4 Riffles/Runs (tailwaters)

A5 Pools (deep water, slow velocity, soft substrate)

A6 Side Channel/Back Channel Habitat

A7 Fish Passage

A8 Riparian Enhancement/Protection

APPENDIX C Micro Computer-Aided Cost Engineering System (MCACES)